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Social sustainability and residents' experiences in a new Chinese eco-city

Abstract

The article argues for a “humanizing” research agenda on newly-built forms of eco-urbanism, such as eco-cities. Taking the example of the Sino-Singapore Tianjin Eco-City, China, the article focuses on urban social sustainability with a specific focus on the lived experiences of new residents of the newly-built eco-city. Drawing on Jane Jacobs' work on the spaces of the city, the article's focus on residents' experiences underlines the key importance of social sustainability when analysing new flagship urban projects, and highlights the need to consider the relational networks of lived experiences of the city as well as the visions and techno-social designs of planners, policymakers and corporate actors in the development of eco-city projects.

1. Introduction

In this article, we make the case for “humanizing” newly-built urban mega-projects such as eco-cities by focusing on urban social sustainability, through the lens of the experiences of new residents in newly-built cities. We focus on Tianjin eco-city, China, as our unit of analysis for several reasons. Firstly, it is the largest newly-built eco-city to date. Secondly, it is actually operational (as opposed to myriad other projects that exist in blueprint form only, or which have stalled). Thirdly, and perhaps most importantly, Tianjin eco-city has also been partly populated, opening up the opportunity for assessing new residents' experiences. We base our conceptual framework in the context of debates over social sustainability (Dempsey et al., 2011, Vallance et al., 2011, Woodcraft, 2015), and argue that there is a need to focus on the way(s) in which socially sustainable urban environments are constructed, in new urban spaces, through relational networks comprised by interactions between residents, buildings, facilities and specific (e.g. domestic) spaces. In focusing on the *spaces* of urban social sustainability we draw on Jane Jacobs' seminal work on, and critique of, the modern city (Jacobs, 1961). Jacobs' work is useful here because of its focus on moving past the plans, blueprints and rational urban visions proposed by master planners, engineers and architects, and towards valuing the role of the rather more messy relationality found in the everyday city. It is nevertheless important to remain conscious of our positionality as researchers, and of the difficulties implicit in applying a concept such as social sustainability to a very specific urban and national context in Tianjin. We attempt to tackle these issues by focusing on linking more abstract notions of social sustainability to the experience of urban space, letting discourses around social sustainability emerge from residents' narratives of their experience of the eco-city.

Recent critiques have highlighted the ways in which urban development trajectories are often predicated on visualisations of antecedent urban models that are mainly rooted in a European and American urban context (Bunnell, 2015, Robinson, 2013). With regards to new urban projects in China, studies have highlighted the prominence of international partnerships in the construction of new cities (de Jong et al., 2013a), as well as the importation of urban planning

and design models from other national traditions such as Singapore (Pow, 2014, Lim and Horesh, 2016) or Sweden (Hult, 2013, 2016). At the same time, an emerging body of literature analyses the prominence of Asian urban models in influencing the construction of new cities in China and beyond (Percival and Waley, 2012, Pow, 2014) as well as broader urban change processes (Waley, 2016). However, at the same time as Asian urbanism is being seen through less “EuroAmerican” perspectives (Bunnell, 2015), there have been calls to recognise the importance of international planning models in the trend for the construction of new urban areas in Asia, the Gulf, and elsewhere (de Jong et al., 2013b, Rapoport, 2015a, 2015b). This is the case, for example, with South Korean smart and sustainable urban development projects (Shwayri, 2013, Mullins and Shwayri, 2016), as well as Japan’s eco-city collaborations with other Asian countries (Low, 2013). In addition, and as Joss and Molella (2013) have shown with regards to the currently stalled Caofeidian eco-city project in Hebei province, China, new eco-urban projects can exhibit significant tensions related to their positioning within a national and international planning and economic development landscape. In addition, it is important to site analysis of eco-city projects within broader urban development trends that encompass urban decline as well as emergence, as He et al. (2017) point out with reference to shrinking cities in mining and extractive resource areas in China. Thus, our analysis of Tianjin eco-city is conscious of the Chinese and Singaporean context within which the new city was envisioned and built, as well as the wider, global circulation of planning and engineering knowledge and human capital that characterises flagship urban developments worldwide. It is in this context that Jacobs’ work becomes useful: after all, Jacobs herself was writing at a time when New York seemed to be influenced, in part at least, by non-American planning models, as seen by her trenchant critique of Le Corbusier.

2. Methodology

The article is based on interviews, participant observation, and documentary research. Fifteen interviews were carried out with residents of the eco-city. Interviews were carried out in Mandarin in June and July 2014 on the eco-city site. Seven male respondents and eight female respondents were interviewed, of which five were in the 20-40 age range and 10 were in the 40-60 age bracket. All respondents lived on the eco-city site at the time the interviews took place. Three of the interviewees worked for real estate corporations with operations in the eco-city, and one respondent worked for a community organisation within the eco-city. Most of the interviewees lived in Tianjin city, or in Tanggu district, before moving to the eco-city site. However, two residents had moved from further afield (Jiangsu and Liaoning provinces). Of the older residents interviewed for the purpose of the research presented here, the reasons for moving to the eco-city included retirement, and the opportunity of looking after grandchildren while parents worked in Tianjin or Beijing.

The interview sample was constructed using a snowballing approach: a worker at a community centre within the eco-city was used as a gatekeeper for recruiting residents for participants in the research presented here. It is difficult to assess the sample’s representativeness, as there is little available data on the current demographic composition of the eco-city. Nonetheless, one sample characteristic worthy of note is the fact that the majority of the sample was aged 40 or above. This is interesting in that the eco-city’s own branding and marketing seems aimed at “young” professionals and families. However, what could explain the bias towards the over-40s in our sample is the temporal dimension: it is difficult to access employed residents as interview participants during the day. This partly justified the use of the gatekeeper, who was asked to provide us with a broadly representative

sample of interviewees based on her experience both as a resident of the eco-city, and as a worker in direct contact with eco-city residents.

Participant observation was carried out over the course of several site visits between 2012 and 2014. It included visits around the time the city received its first residents, as well as in 2014 when a larger number of residents had moved in. Documentary research, aimed at discourse analysis, focused on policy and corporate documents relating to the eco-city project from its inception to 2014. Sources for these documents included provincial authorities and the eco-city consortium, as well as reports and documents from the major real estate development corporations involved in the project.

3. Tianjin eco-city: from blueprint to lived space

Tianjin eco-city is one of the largest eco-city projects currently under construction. It is a relatively new project: the site for a new, national eco-city was selected by the Chinese government in late 2007, and construction started in 2008. At a governmental level, the eco-city is a collaborative project jointly owned by the Chinese and Singaporean governments: its official name is the Sino-Singapore Tianjin Eco-City (SSTEC). Both governments own fifty percent of the Sino-Singapore Tianjin Eco-City Investment and Development Corporation (SSTECIDC), the consortium organisation charged with the task of developing the eco-city. Partner organisations in the development of the eco-city include the Keppel Group, a Singaporean conglomerate, and property developers from China, Taiwan, Japan and Malaysia. The design process for the eco-city was complex and included input from the consortium members, as well as from other governmental bodies. These included Singapore's Building and Construction Authority, its National Environment Agency (NEA), and its Housing and Development Board (HDB). The project master plan was designed by the China Academy of Urban Planning and Design, the Tianjin Urban Planning and Design Institute, and a Singapore planning team led by the city state's Urban Redevelopment Authority (URA). The overall planning approach was largely centralized and top-down, and involved little citizen consultation. However, more recently "community leaders" who are new residents of the eco-city have been included in some future planning-focused events (such as visits to Singapore), although the extent to which these events represent true consultation (over and above the need to "train" community leaders in the consortium's goals and vision for the project) is an open question.

The site chosen for the construction of Tianjin eco-city (figure 1) was the Tianjin Binhai New Area special economic zone, near the city of Binhai, around 40 kilometres from Tianjin proper. The site was on a former wetland area that had been used for industrial purposes, including the storage of contaminants in effluent ponds. The area was decontaminated as part of the eco-city project, so that the site could be repurposed for urban habitation. This was discursively presented as the successful reclamation of land previously seen as "waste" land (Caprotti, 2015). However, the selection and development of an area not previously zoned for agricultural or urban uses can also be contextualised in the broader landscape of land tenure in China. Chien (2013) has highlighted how this system (based on the implementation of limits on the conversion of agricultural to urban zoning at the level of a province) effectively incentivises municipal governments to convert land which does not fall into either the urban or agricultural category into new cities. Tianjin eco-city was built on a similarly converted and reclaimed area of land.

Figure 1 about here: Location of Tianjin eco-city (source: Authors)

1
2 Tianjin eco-city has received an increasing amount of attention from both policymakers and
3 scholars. The World Bank authored a report on it in 2009 (Chen et al., 2009), and the Bank's
4 Global Environment Facility granted SSTECH a US\$6 million development grant in 2010.
5 Scholars from a range of disciplines have investigated the eco-city from a wide variety of
6 angles. Much of the scholarly attention to date has focused on the project's specific aspects.
7 This has ranged from analyses of the eco-city's green building standards (Ye et al., 2015), its
8 Key Performance Indicators (Zhou, 2014), policy transfer between Singapore and China
9 (Chien et al., 2015, Low et al., 2009), to the role of the eco-city in China's urban and
10 economic transition (Hu et al., 2016).

11
12 There is also an emergent scholarly strand pointing to the need to critically engage with
13 Tianjin eco-city and its visions, policies, and blind spots. In part, this critical strand is based
14 in wider critiques which have highlighted how, in both the global (de Jong et al., 2015) and
15 Chinese (Shao, 2015, Xu and Chung, 2014, Yu, 2014) contexts, terms such as "eco-city",
16 "low-carbon city" and "sustainable city" are being used by an increasing range of actors and
17 stakeholders (Fu and Zhang, 2017), at the same time as their definition remains vague. In
18 particular, Sharifi (2016) highlights how prominent eco-urban planning models (from Garden
19 Cities to contemporary eco-cities) exhibit a strong focus on physical urban spaces, to the
20 detriment of social spaces and the pluralist planning potential of new urban spaces. More
21 specifically, concerns have been raised as to the placement of Chinese eco-urban projects
22 within a wider landscape of urban boosterism and green urban entrepreneurialism (Pow and
23 Neo, 2013, Wu, 2012). Critical focus is also being increasingly placed on the question of how
24 to interrogate Tianjin eco-city, and other eco-urban projects, not only in terms of their KPIs,
25 stated aims, and masterplans, but also with regards to their lived, material realities when these
26 projects are actually built. As Rapoport (2015a) has argued, there is a need to move from
27 analyses of blueprints, to analysis of lived spaces. This helps critical analysis to focus past the
28 Photoshopped visions of eco-utopian urban futures produced by consultants and planners
29 (Rapoport, 2015b) and on the material spaces constructed and experienced within these cities.
30 As Wong and Liu (2016) have argued, city branding and flagship urbanism in transitional
31 China have had the effect of generating asymmetrical power geometries that have affected
32 and in some cases deepened inequalities, especially with regards to rural-urban migrants
33 (although recent policy developments are going some way towards mitigating these
34 inequalities). Recent work has therefore focused on the social and economic problems that
35 emerge with the envisioning of "sustainable" urban plans, and on how to adequately analyse
36 and tackle these (Freeman and Yearworth, 2017). In this lens, scholars have started to engage
37 with the "lived" aspects of Tianjin eco-city (Caprotti et al., 2015, Flynn et al., 2016),
38 including the materialities of the production and construction of the eco-city, and the
39 attendant inequalities resulting from this (Caprotti, 2014a, 2014b, 2015). This focus does
40 much to rebalance the overly technical, planning and policy-oriented range of analyses of the
41 eco-city towards a recognition of the city as lived, relational space. As Hu et al. (2015: 6)
42 have argued:

43
44 "In the strong top-down approach that has been adopted in the development of SSTECH, policies and law
45 enforcement are the major drivers of meeting quantitative efficiency targets in the building of the eco-city while
46 the public's requirements and acceptance of the project and its cultural embeddedness have been the last factor
47 to be considered."

48
49 The success or failure of any eco-city project must be seen in this light, and not simply as a
50 set of characteristics that can be categorised and analysed through what could be termed

“metrics at a distance”. It is at this juncture that we focus our analysis of the experiences of new residents of the eco-city.

4. Lived experiences of the eco-city: from blueprints to relational spaces

We focus on actually existing urban projects such as Tianjin eco-city as *lived* spaces. This approach is based on an understanding of the city that is relational and social. The eco-city is an often abstract and idealised space of technological visions, technical processes, and policy and financial discourses and mechanisms. We argue that it should also be considered as a space alive with *social* processes. It is the interaction between these different types of spatial processes that enable researchers to gain a more holistic and in-depth perspective of the city-as-place (Murdoch, 2005). While plans, metrics and indicator systems may provide a systematic analysis of techno-environmental and economic phenomena and trends within the city, urban areas have to be dynamic in order to be alive (Graham and Healey, 1999). Their aliveness in turn determines (at least in part) their success as viable urban projects. The discussion and analysis below frames the contextual treatment of the “lived spaces” of the eco-city at the juncture of two bodies of literature: that on sustainable, smart and eco-cities (Joss, 2015), and literature on the social dimensions of urban sustainability (Dempsey et al., 2011), including a focus both on urban social sustainability and on insights that can be gleaned from Jane Jacobs’ (1961) classic work on renewal in the city. These are the building blocks on which our call for what can termed a “humanizing of the city” is built.

4.1 Urban social sustainability and community

Although the concept of social sustainability has been defined in a range of ways (Vallance et al., 2011), it is key to outline what urban social sustainability means in the context of our study of Tianjin eco-city. This is because, as Woodcraft (2012) has argued, it is important to be able to move from theoretical and often abstract debates around the meaning(s) ascribed to social sustainability, to an investigation and operationalization of urban social sustainability “in practice”. Specifically, it is key to analyse how urban social sustainability is interpreted and represented by different actors and stakeholders within the city (Romano, 2015). In a new urban area such as Tianjin eco-city, this means moving past planning and policy discourses and documents and engaging with the lived, relational experiences of the city by its first residents. Our analysis rests on the understanding of urban social sustainability introduced by Dempsey et al. (2012). This is based on a definition of the concept, and of its place-specific materialisations, as dependent on the twin factors of social equity on the one hand, and sustainability of community on the other. Social equity refers to “fair distribution of resources and an avoidance of exclusionary practices, allowing all residents to participate fully in society, socially, economically and politically” (Dempsey et al., 2012: 94). In the case of Tianjin eco-city, this signifies assessing the resources (from essential services, to public transport, employment opportunities and affordable housing) made available to citizens, as well as the existence of any exclusionary spaces, technologies, policies or practices that may impact on the new city. Sustainability of community, on the other hand, refers to the ability of the local urban community to sustain and reproduce itself, and to function at a level acceptable by members of the community (Bramley and Power, 2009, Dempsey et al., 2011, Yiftachel and Hedgcock, 1993). Sustainability of community involves a range of practices and processes, including the level of participation in local institutions, the rapidity of population turnover, trust, pride, identity-formation around the urban community, as well as stability and satisfaction with domestic spaces and with the quality of the local urban environment. Tianjin eco-city is a high-rise urban development in which density is a

key factor. It is therefore key to note Bramley et al.'s (2009) analysis of the links between density and social sustainability. In their work, Bramley et al. highlight how some aspects of social sustainability, such as neighbourhood attachment, stability, and satisfaction with domestic spaces are negatively related with density (and therefore with specific configurations of urban form, such as closely packed high-rises with few green spaces). This means that the sustainability (and therefore the success) of social and economic spaces in a new urban development such as Tianjin eco-city are closely interrelated with the overall planning and design of the city's urban form. However, some factors (such as those related to the use of local services, and travel and transport) seem to be positively related to higher densities, indicating opportunities for urban social sustainability in the eco-city, as long as these services are adequately planned. Finally, it is to be noted that Bramley et al.'s work was carried out in a UK context, and that their findings would need to be robustly tested in a Chinese context. Although this lies the scope of our article, it underlines the need to be sensitive to specific locations.

Scale is a determinant in assessments of urban social sustainability. This is because it is key to define the area (geographically and in network and relational terms) under investigation. This is increasingly important not only in the case of new cities (which are easier to delimitate) but also where specific and smaller-scale urban interventions are planned or in progress (Joss, 2011). Recent urban development projects in a range of geographical settings have included urban social sustainability in their plans in varying degrees of detail. Experiments in integrating social sustainability measures within newly planned urban areas have emerged. This has included urban experiments carried out by development corporations in the UK with regards to new housing projects (Woodcraft, 2015). Clearly, the scale of a mega-project such as Tianjin eco-city is far greater than most housing developments in the UK. Nonetheless, the eco-city is composed of several different parcels of land given over to specific property developers to build on. Therefore, the social sustainability frameworks discussed in the literature could be seen as applicable on a block-by-block basis in the case of large-scale urban projects such as Tianjin eco-city. Nonetheless, in the context of hyper-rapid urban development in China, the lack of integration of social dimensions into the planning of new communities has been highlighted as a key concern, although planning practice in this regard is geographically variegated (Chan and Siu, 2015). In the case of Tianjin eco-city, for example, a range of social Key Performance Indicators is used to evaluate the performance of the new city. Although some of these indicators are vague, and although they are less detailed than the economic and environmental indicators used in the eco-city, they point to a need to fashion new cities that work not only in economic and investment terms, but as *places* where urban life can happen and flourish. It is in this context that the discussion turns to Jane Jacobs' classic work on urban public space for insights on how to think about new urban spaces in Tianjin eco-city.

4.2 Jacobs and the lived spaces of the city

In our analysis of Tianjin eco-city, we focus on the experiences of the new city's first residents. In so doing, we draw on the work of urban scholar Jane Jacobs, and in particular on her conceptualisations of *lived* urban spaces, and her analysis of the consequences of urban renewal and master planning on the city's social fabric. In her seminal work *The Death and Life of Great American Cities* (Jacobs, 1961), Jacobs was not writing about newly-built eco-cities. However, she was in large part concerned with analysing the impacts of new modernist developments in cities like New York: planned along rationalist lines by engineers, planning elites, and city authorities. Her critique of the lack of attention paid to what can

1 today be termed urban social sustainability begins with a fine analysis of the dehumanising
2 impact that blueprints for new urban areas can have on the city:

3
4 “[T]he principles of sorting out – and of bringing order by repression of all plans but the planners’ – have been
5 easily extended to all manner of city functions, until today a land-use master plan for a big city is largely a
6 matter of proposed placement, often in relation to transportation, of many series of decontaminated sortings.”
7 (Jacobs, 1961: 25).
8

9 This critical emphasis can be applied, with due sensitivity to historical and geographical
10 context, to the new spaces and buildings which form the engineered heart of a new project
11 such as Tianjin eco-city. Nonetheless, we aim to avoid the facile critical pathway of holding
12 up the eco-city as a straw man to be brought low. Our concern is rather with recognising,
13 first, that the eco-city is in a process of materialisation. While critiquing this process is
14 important, it is also key to engage with the question of how new city spaces can be
15 envisioned so as to be more sensitive to urban social sustainability and to the needs of the
16 urban community. Indeed, Jacobs’ key concern was to move past critique and investigate the
17 possibilities of refocusing on the “ordinary city” or the “workaday city”, the beating heart of
18 urban life that is often absent from the clean, hygienic and stylised visions put forth in
19 planners’ visions for new urban centres. Jacobs’ critique of Le Corbuserian designs in the
20 mid-20th century could just as easily apply to the master planned and engineered visions of
21 eco-cities today: “Like a great visible ego, it tells of someone’s achievement. But as to how
22 the city works, it tells, like the Garden City, nothing but lies” (Jacobs, 1961: 23).
23

24 Jacobs’ work is replete with observations on urban social sustainability. In our analysis of
25 Tianjin eco-city we deploy the notion of a set of three relational spaces through which the
26 new city’s current and potential future social sustainability can be examined. The thread
27 linking these spatial categories is the focus on spaces of the city as socially relational,
28 performed and experienced (McFarlane, 2011). Firstly, our analytical focus is on the overall
29 spatial layout of Tianjin eco-city, including the availability and experience of the social and
30 other facilities provided in the new urban area. This notion of the perception of urban space is
31 key to Jacobs’ analysis of the city. In Jacobs’ account, perceptions of urban space (and of the
32 buildings and services present within this space) leads to a city’s public spaces either being
33 successful, or unsuccessful. This extends to the range of services and shops available in the
34 city: “The greater and more plentiful the range of all legitimate interests [...] that city streets
35 and their enterprises can satisfy, the better for the streets and for the safety of the city”
36 (Jacobs, 1961: 41). It has to be recognised that an assessment of the perception of city space
37 by residents of a new urban mega-project such as Tianjin is necessarily preliminary and not
38 definitive. It is nonetheless an important component of the analysis of a new city’s current
39 and potential future social sustainability.
40

41 Secondly, the article focuses on the eco-city as an economic space of both production and
42 consumption. The aim is to explore the ways in which the eco-city’s residents experienced
43 their move into a newly-built urban environment, and the obstacles, frictions and positive
44 possibilities present therein. This is part and parcel of the human experience of the city. In a
45 new development such as Tianjin eco-city, economic space becomes a key interface between
46 the private (domestic) experience of the city, and the commercial and consumption-based
47 aspects of urban relationality. Jacobs (1961) placed a significant emphasis on the role of
48 economic space and commercial signifiers in a socially sustainable city. She highlighted the
49 complex ways in which stores, eating establishments and other commercial venues increase
50 urban security while at the same time attracting yet more relational activity to city streets.
51 She also called for a diversity of commercial outlets on city streets, shoring up her wider

championing of diversity as one of the keys to urban social sustainability. In so doing, Jacobs prefigured later work on urban social sustainability (e.g. see Bramley et al. 2009) which delved in more detail on the determinants of social sustainability in urban areas. Jacobs' analysis tended to depict density in a positive light, in part due to the links between density and socio-economic interactions and their effects on the liveability of urban spaces and places (Moroni, 2016, Roskamm, 2014). However, it is also important to note here the complexities of investigating the interface between sustainability, economic spaces and urban form:

“One of the problems with trying to relate urban form to social phenomena is the difficulty of separating causal effects from selection effects, where selection effects are the result of different individuals and groups living in different places. For example, people with mobile careers or lifestyles may tend to live in certain areas because of their housing tenure, access to central amenities, and their affinity to similar people. They may display low place attachment, community engagement, or local social interaction, and high mobility, but this is not causally related to housing types or neighbourhood density.” (Bramley et al., 2009: 2129).

Thirdly, the lived domestic spaces of the city are analysed, with a specific focus on the (dis)juncture between new “eco” apartments, the eco-city’s green marketing claims, and new residents’ lived experiences of these spaces. It is at this juncture that our analysis branches out from some accounts of urban social sustainability, and from Jacob’s critique of urban planning. Much of the scholarly literature has, thus far, focused on urban social sustainability, and the sustainability of community, as something that is relational but is not specifically spatialized within discrete spaces. Nonetheless, it is becoming increasingly clear that urban domestic spaces, and housing more generally, are crucial to the effective functioning and sustainability of urban communities (Bramley and Power, 2009, Chiu, 2004). In the Chinese context, housing has also become a key dimension of urban social change in the context of economic development and hyper-rapid urbanization (Chiu, 2002, Yung et al., 2014, Zou, 2014). At the same time, domestic spaces within housing developments (their layout, functioning, availability and cultural roles) are crucial components of existing and new urban environments. These include existing iterations of “enclave urbanism” (Breitung, 2012, Douglass et al., 2012, Shen and Wu, 2012, Thompson, 2013) as found in the residential blocks that constitute Tianjin eco-city.

5. Lived spaces of the eco-city

5.1 Perceptions of eco-city space

When conducting interviews, it became clear that the facilities currently included in the city were appreciated and, in most cases, used by the city’s new residents. Several interviewees expressed appreciation of the community centres, social spaces, libraries and other facilities provided close to residents’ accommodation. For example, during our visits it became clear that as well as appreciating physical facilities such as community centres, activities and opportunities for social engagement that took place in community spaces were also highly valued and contributed to a sense of wellbeing in the new city. This is in line with recent research pointing to the fact that in dense urban areas, proximity of resources increases social sustainability through increased wellbeing (Kytä et al., 2016). Several of these activities were aimed at specific demographics: for example, there were painting and calligraphy classes for students on Saturdays, for employed residents on Sundays, and for retirees on Tuesdays and Thursdays.

1 Nonetheless, what was also apparent was a sense that their enjoyment of these facilities may
2 change or even decrease after the city reaches its target population levels. One of our
3 interviewees, a young mother, encapsulated these concerns:

4
5 “At the moment, I am very happy with these facilities, because you do not see this anywhere but Tianjin Eco-
6 City. You can enjoy relaxation within the eco-city without going anywhere else, like adults have places to do
7 exercise and other activities, children have very safe places to play after school, and you do not have to worry
8 about their safety. However, something that I am worried about is that within such a limited community activity
9 space, problems might occur, for example conflicts between children, when more and more people move into
10 the eco-city in the future, because the current permanent residents are a rather small proportion [compared to the
11 eco-city’s planned population].”
12

13 This highlights the fact that while the facilities built within Tianjin eco-city were seen to be
14 of a good standard, nonetheless one of the attractions of the new city was the fact that the city
15 was relatively *empty*. This cannot be considered a major driver for residents purchasing
16 properties and moving in to the eco-city. Rather, it highlights the potential marginal
17 qualitative benefit accrued from moving to an urban space that is comparatively less
18 crowded, and better resourced, than other Chinese urban areas. Nonetheless, it also highlights
19 one of the potential drawbacks (in terms of social sustainability) of newly planned and built
20 urban areas: it is recognised that sparsely populated urban areas in terms of foot traffic “on
21 the street” can become characterless *spaces* and not social *places* where interactions can
22 happen and where the city is lived and performed (Jacobs, 1961, Koch and Latham, 2012).
23 This is especially true in the context of Tianjin eco-city, where even though pedestrianised
24 spaces exist between residential buildings, and even though park space is included in the
25 project (figure 2), the streets dividing each residential block from each other are wide and
26 non-porous (figure 3). Thus, while overcrowding may be avoided in a new urban project such
27 as Tianjin eco-city, further research as the project develops will need to focus on how streets
28 and other spaces become places for urban life to take place – or not, as the case may be. This,
29 as much as design and green and smart technologies, will help determine the success or
30 failure of Tianjin eco-city as an experimental urban project.
31

32 **Figure 2 about here: the eco-valley park**

33 **Figure 3 about here: empty street space in the eco-city**
34

35 **5.2 The eco-city as economic space**

36 Tianjin eco-city can be seen both as an urban experiment (Evans and Karvonen, 2014,
37 Caprotti and Cowley, 2016) and as an attempt to fashion a new and different type of economy
38 in a new city (Caprotti, 2015). Plans for the eco-city exhibited a strong focus on establishing
39 the urban area as the central node in a zone focused on the green economy and on high-tech
40 and high value-added industries and services. In part, the eco-city was also economically
41 positioned so as to be a potential residential option for those working within Tianjin’s
42 existing animation industry. One of the challenges faced by the new city is that of
43 encouraging economic development in and around the city itself. This will help the eco-city
44 achieve its aims of reducing car use as well as providing a more integrated city experience.
45

46 It is too early to assess the economic impact of the eco-city: corporations and firms’
47 locational choices take time to materialise. Therefore, the comments and analysis below are
48 based on the snapshot of urban economic experience provided by current residents.
49 Nonetheless, it was clear that interviewed residents thought that the eco-city’s demographic
50 composition (apparently skewed towards retirees and those aged over 40) was in part due to

1 the contemporary (and potentially temporary) paucity of employment opportunities in the
2 vicinity. As one interviewee argued:

3
4 “...the local economy is one-sided as industries are very limited in the eco-city, electronics and animation
5 industries are the predominant ones. The employment opportunities that these industries provide do not suffice
6 for all inhabitants, especially those who are not trained in the electronics and animation industries, who will find
7 it difficult to be employed locally. Plus, most industries are only enrolled in the eco-city’s economic plan, but
8 their actual offices are still somewhere else. This is also a reason why most permanent residents here are
9 elderly.”

10
11 Apart from employment opportunities, the chances for residents to engage in shopping and
12 other consumer activities were, by mid-2014, still limited. While this can, again, be seen as
13 temporary and dependent on the city’s developmental status, it is also an obstacle (or
14 deterrent) to residents moving to the city. This is because while affordability is a key issue
15 when considering the social sustainability of new urban spaces, at the same time spaces of
16 consumption are key to a city’s social sustainability (Colomb, 2007). These spaces are *social*
17 spaces as much as spaces where products may be viewed and purchased. One of our
18 interviewees, for example, bemoaned the fact that no clothing stores existed within the eco-
19 city itself, and that for every clothing purchase she had to travel into Tanggu district. A
20 further obstacle was the perceived expensive nature of foodstuffs and other goods actually
21 available in the eco-city. Participant observation highlighted the fact that a standard meal at a
22 small restaurant in the eco-city was up to twice the cost of a similar meal in Tanggu district
23 outside it. Thus, both economic vitality and affordability can be seen as crucial aspects to
24 consider when assessing the social sustainability of eco-urban projects such as Tianjin eco-
25 city. In light of the points made above, affordability needs to be seen in a broad sense as
26 encompassing housing prices, rents and the availability and cost of credit, while also
27 encompassing issues such as the prices of goods, services and travel and commuting, as well
28 as the opportunity costs and benefits of moving to a newly-built urban area. Finally, and as
29 noted by Pow and Neo (2015) in their study of the eco-city, several residents noted how
30 apartments in the eco-city could be seen as investment opportunities in terms of their
31 potential future higher resale value. Respondents mentioned that current apartment prices
32 were likely to rise as the eco-city becomes populated and more economically viable.

33 34 **5.3 The eco-city as lived domestic space**

35 One of the highly advertised and marketed features of Tianjin eco-city is the provision of
36 “green” domestic spaces (apartments in new, high-rise residential buildings) for the new
37 residents of the city. A range of technologies are marketed as central to the aim of making the
38 eco-city a green and sustainable urban area not only in terms of economic activities, but also
39 in terms of its buildings and in the consumption practices implicit in domestic living. Many
40 of the property developers that have built residential accommodation in the city market the
41 green building standards used in construction, as well as the use of solar water heating, the
42 provision of filtered water, air filtering equipment, the use of energy from renewable sources,
43 and the like. This focus (on the eco-city dweller and their domestic space and associated
44 technologies) has been critically investigated and described as the construction of “filtered
45 communities” (Boland, 2007). Furthermore, the focus on technologies (such as water and air
46 filtration) that keep residents safe from environmental pollution has been analysed as
47 exemplifying a subtle discursive and material message that the eco-city is “eco” primarily *for*
48 *its residents* rather than for the external *environment* (although these technologies clearly also
49 have the potential of reducing residential units’ environmental impacts) (Caprotti et al.,
50 2015). These concerns raise issues around the socio-environmental (in)justices potentially

present in plans for new eco-cities and other urban mega-projects (Chang and Sheppard, 2013, Neo and Pow, 2015).

A further example of the eco-city's outward-facing "green" marketing not corresponding with the experiences of its initial residents is residents' engagement with technologies, such as solar hot water, which promise low-energy and low-cost enjoyment of daily activities such as hot showers. Interviewees' experiences with these technologies were mixed, with some enjoying their use in unproblematic fashion, while others were disappointed at poor performance. As one interviewee stated:

"I think Tianjin Eco-City is just a superficial project. The reason why I am saying this is because everything you can see here is almost perfect, you can feel that this really is an eco-city with good social facilities, green areas, prevalence of renewable energy etcetera. However, the solar energy for hot water in my apartment does not work satisfyingly. The eco-city promises that they will use three-star quality standards of renewable energy, but I think they only use the renewable energy that matches basic requirements. Sometimes, the hot water for showering is only enough for one person, sometimes it is completely cold, the most annoying moment is that the shower temperature works well at the beginning and then suddenly turns to cold and it repeats like this. So we have to use electricity while taking a shower and that is not energy efficient. I really want to be environmentally friendly, but sometimes you just don't have the choice to do so."

A further topic of friction between marketing hype and eco-city residents' experiences of their domestic spaces was the provision of filtered water, with its promise that water could be drunk straight from the tap, without the need (common in China) for boiling. The eco-city's marketing materials celebrate the provision of clean water to residents: the provision of filtration technologies can be considered as a visionary improvement in urban living. However, most interviewees admitted to still using boiled water, or their own filtration equipment, even though the water supply was meant to be filtered and clean direct from the tap. One of our interviewees, one of the earliest residents of the eco-city, stated that:

"As I used to work for the waste water treatment sector, I normally test the domestic water quality by simply putting alum into the water when I am home. I noticed that there was some yellow sediment from the tap water in the eco-city. This is something that I never came across in [my province of origin], and I know that the water quality is not as good as what they have told us. But alum is not toxic, so the water is still usable after filtering out the alum. I normally use it for washing vegetables. For drinking water, I often boil the water first."

However, residents' previous experiences with tap water in their city of origin were also key determinants of their perception of water quality in the eco-city. For example, one interviewee from a north-eastern province stated that even though sediment was visible in tap water in the eco-city, it was less than what they used to witness in tap water in their home city, and that therefore water in Tianjin was a clear improvement. Another interviewee stated that regardless of claims about clean water by eco-city authorities and developers, they still boiled water and used their own filtration equipment as a matter of course.

The eco-city's domestic spaces can be seen as part and parcel of new "filtered communities" enabled by the city's green regulations. Nevertheless, the lived reality of residents of these spaces is less one of enjoyment of ecologically modernised living conditions (Spaargaren and Mol, 1992), and more one of concern over the diffuse and often invisible risks still present in the new city (Beck, 1992). While many residents commented on their positive enjoyment of the city's green spaces and spatial layout, domestic spaces were seen by many as interfaces with environmental inputs (water, air) that could deliver risks and negative externalities directly to residents in their own homes.

6. Discussion and conclusion

The above discussion focused on the specific ways in which the first residents of Tianjin eco-city engaged with the new urban area to which they had moved. The analysis we have presented a.) takes as a starting point the conceptualisation of urban social sustainability as found in Jacobs' work, and in more recent and more detailed work on the concept; b.) highlights some fruitful further areas for advancing a research agenda on newly-built urbanism. Firstly, the article moves past a focus on plans and blueprints for newly-built eco-cities and other new urban forms. In focusing on the lived experiences of the first residents of the eco-city, we highlighted the *human* dimension found in interactions between residents and the materialisation of designers' visions of the new city. We argue that it is at this juncture that useful research can be carried out in interrogating the goals, indicators, top-down evaluations and marketing and (quasi)-political justifications for new urban areas that often characterise new cities. The focus on engaging with the trend for newly-built urbanism, in China and elsewhere (Castells and Hall, 2014, He, 2010, Ong, 2014) builds on Jacobs' (1961) critical analysis of the deployment and impact on existing cities of modernist blueprints and visions that feature more focus on urban architectures and plan-based layouts than on human interactions and lived spaces. These often vibrant spaces cannot easily be reconciled with the straight lines and stylised visions of architects and planners: "people who get marked with the planners' hex signs are pushed about, expropriated and uprooted, much as if they were the subjects of a conquering power" (Jacobs, 1961: 5). Humanizing the city, in turn, enables the focus to shift from plans, technologies, indicators and metrics (which lend themselves well to studying environmental and economic sustainability), and towards social sustainability in the city. A focus on urban social sustainability that is engaged with the messiness of lived urban experience will enable researchers to move past a (much needed) focus on *planning* for new cities, to a focus on *living* in these newly-built environments. This will, in turn, enable the voices of residents (and, it is hoped, also of the less-visible and marginalised citizens in and around new cities) to emerge in scholarly work on newly-built urbanism and urban mega-projects. In a field that is crowded with the loud and hegemonic discourses of governments, planners, urban marketers and urban design and engineering corporations, a focus on humanizing the city through paying attention to its new residents is beneficial, and re-connects with Jacob's key focus on micro-spaces of social interaction and emergence (Moroni, 2016) that lead to the formation of *places* in the city.

Secondly, a focus on humanizing the city and on giving more analytical weight to urban social sustainability enables urban scholars to re-engage with planners and policymakers in their design of newly-built urban areas, whether that be in eco-cities, smart cities, new neighbourhoods, or other new formulations and reproductions of the urban. Concern with urban social sustainability on the part of developers and municipal governments is often less about social equity and community, and more about what Gressgård (Gressgård, 2015), in her study of Malmö's urban development strategy, describes as the enrolment of urban residents into "fantasmatic" visions of urban futures. The risk in this is that urban social sustainability becomes, effectively, a measure of residents' conformity with the plans put forth by urban strategists. Jacob's concern with the top-down implementation of modernist visions "onto" the existing city are, in this context, ever more relevant. This is because the imposition of "visions" and "plans" from the top down can have the effect of "hollowing out" concerns with the "sustainability of community" (Bramley and Power, 2009, Dempsey et al., 2011) that, we argue, should be at the centre of plans for new cities that are seriously committed to being socially sustainable. In this context, Sharifi (2016) has usefully argued for a consideration not simply of the physical spaces of new urban areas, but for a pluralistic

approach that considers their social aspects. Sharifi advocates a planning system that has a genuine concern with citizens and other stakeholders vis-à-vis the physical environment (see also Bramley et al., 2009). As Barker (2005: 98) has argued,

“How do we know which urban forms and designs are really best? Environmentalists can be very dogmatic, and very prescriptive for other people’s lives. But what makes us think that in this we are that much wiser than those who, in the past, were convinced they, too, had the monopoly of wisdom?”

Humanising the eco-city, and focusing on urban social sustainability, means recapturing the importance of the social facets of cities that are ostensibly planned in order to be more environmentally sustainable, and more economically successful. Scholars have highlighted the multiple ways in which economic imperatives are often dressed up as ecological needs in the construction of new urban areas such as eco-cities or smart cities: “what they ultimately deliver is an incremental approach to incorporating sustainability principles into urban development projects in which economic concerns remain paramount in the interpretation of sustainability” (Rapoport, 2016: 85). While visions of the eco-city are undoubtedly wrappers for economic drivers in most cases (Rapoport, 2014), there remains an opportunity to re-open the envisioning, planning and design process so that it incorporates a plurality of voices (Sharifi, 2016) as well a focus on the micro-spaces of the city that Jacobs was so interested in.

Finally, a focus on the lived experiences of the residents of new and experimental urban areas such as Tianjin eco-city also enables researchers to identify and highlight what is *positive* about the planning, design, implementation and lived engagement with these new projects. Here, again, Jacobs’ take on planning is instructive in its commitment to urban planning *despite* the inhumane use of it that had been made in brutal new neighbourhoods in New York, Philadelphia, and farther afield in the 1950s. As discussed above, Tianjin eco-city’s new residents were by no means wholly critical of the new city, but consistently pointed to both what did not work, and what worked, from their experiential point of view. This leads to a strong case for the necessity of longitudinal, long-range studies of the ways in which new cities and new urban areas develop and are experienced, interpreted and re-interpreted by their new residents. Again, this moves the research agenda past the focus on static visions, blueprints, and short-range case studies, and towards a social science approach to the city that is comfortable with its ever-changing and emergent character.

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